ArcGIS tools for streamlining habitat map data integration

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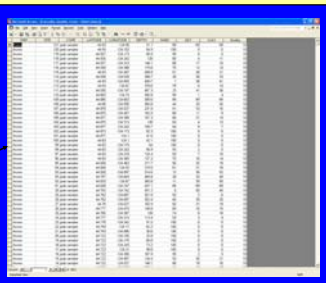
ABSTRACT: We have recently completed surficial geologic habitat maps for the Oregon and Washington continental margins. Through this process, several integrated techniques for habitat interpretation and data quality mapping have been developed and explored. Currently, we use density maps to represent a seafloor environment covered by data that is patchy and of variable quality. Raster maps of data density and quality help facilitate assessments of final geologic habitat map. Additionally, we use geo-positioned in-situ observational data (submersible observations) to verify or ground truth remotely sensed acoustic data. While mapping large geographic regions covered by varied data types, many of the simple and repeatable processing steps required by these techniques become cumbersome and time intensive. Our goals are: (1) to make possible quick and easily regeneration of data quality layers as either new information becomes available or we change a quality appraisal for a particular dataset, (2) to make it easier to assign lithologic attributes to submersible navigation data. In addressing these problems, we are developing ArcGIS tools that streamline the regeneration of data quality layers and the assignment of attributes to time series point or polyline data (i.e. submersible navigation). The data quality tools encapsulate and automate specific processing steps used to create ranked data density maps from raw (raster or vector) input and utilize input/dialog boxes to prompt the user information. Dive attribution tools allows for an envelope selection of navigation fixes (points or polylines), and assign a unique lithology (determined from video review) to the selected records. The tool also renders the navigation layer according to a predefined, but changeable, color and display style. These automation tools make creating and re-creating data quality layers as well as editing dive navigation much easier and faster.

Creating Data Quality Layers

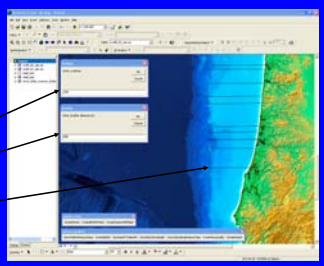
- Creates either point or polyline data quality feature classes
- Buffer feature classes by distance and by buffer rings
- Create raster layer using quality field

Principle datasets (raw & uninterpreted) may consist of points (samples) and lines (tracklines) or vector data



A table of sample point data

Point or Polyline geodatabase feature classes are created from the data tables

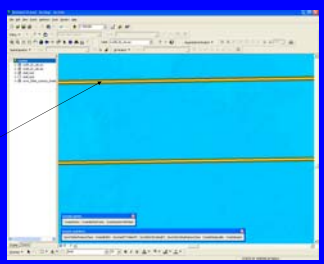


Input box for entering cell size of final raster

Input box for distance to buffer

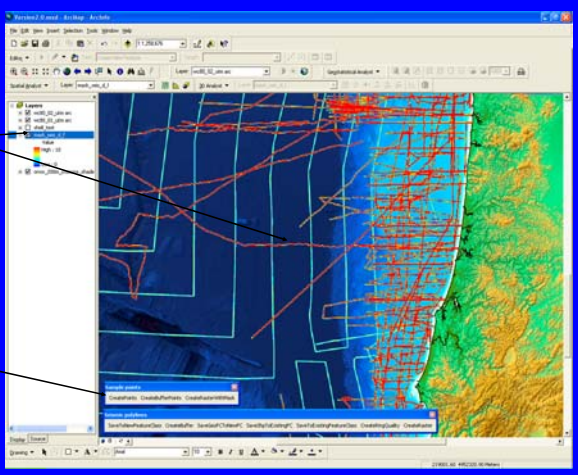
Polyline feature class created

Buffer rings are created for the geodatabase feature classes, quality scores are assigned to the buffer rings



Created buffer rings. Highest quality score is the middle ring.

The buffered feature classes are converted to raster layers, while masking for the area of interest



Final raster

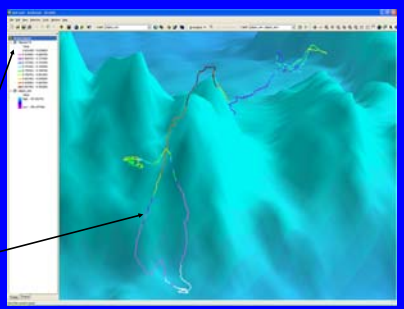
Tool Bars & Buttons

Create a Submersible Navigation Path from dive data

- Creates either point or polyline navigation 22path feature classes
- Uses a table of submersible navigation and depth data (z-values) to create 3-D paths for viewing in ArcMap and ArcScene, editing in ArcMap.

Select geodatabase and a dive navigation table

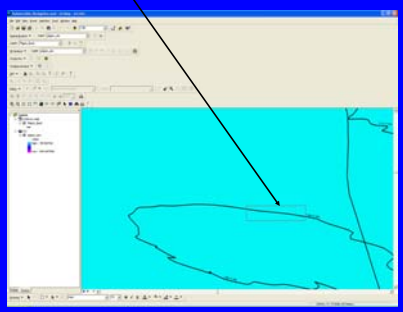
Create name and choose path for the output geodatabase feature class



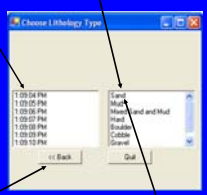
Selecting segments and assigning lithology

- Segment are selected using a rubber band box
- Choose lithology from a listbox
- Attribute table is quickly and accurately updated!

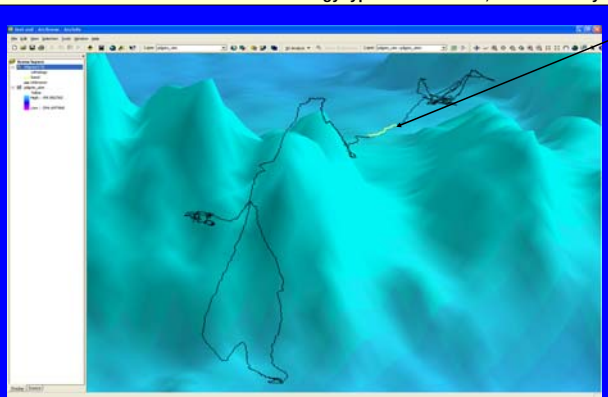
Use tool to select area of observation of feature class using envelope. Once selected form will appear with the area selected in listbox.



Lithology types are added to listbox from text document. Lithology types can be added or deleted as needed.



To choose new feature class or/and new lithology type text document, or/and new style.



Choose lithology type from listbox. Feature class will then be rendered

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